Subject: Integrated Science Review | January 28, 2019
From: Integrated Science Review Editors <shiweiwang2020@u.northwestern.edu>
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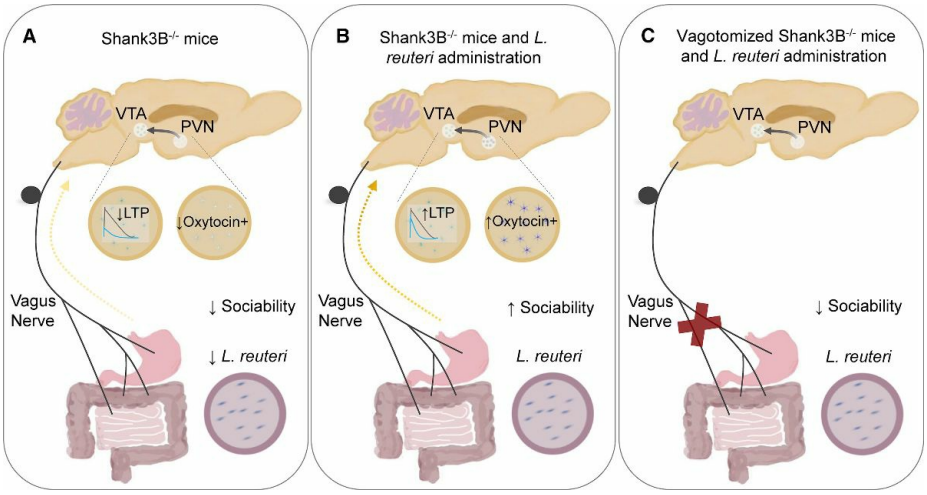
Date Sent: Monday, January 28, 2019 8:59:56 AM GMT-06:00
Date Received: Monday, January 28, 2019 8:59:58 AM GMT-06:00

ISR
integrated science review

January 28
2019



Mouse sociability enhanced by gut microbe, *Neuron*

Gut microbe composition has been shown to influence the social behavior of mice. In this study, Sgritta *et al* examined how *L. reuteri* resolve abnormalities in sociability and preference for social novelty which relate to autism spectrum disorder (ASD). Notably, Sgritta and colleagues find that treating mice for 4 weeks with live *L. reuteri* ameliorates abnormalities in sociability. They manage to test whether vagus nerve **(Neuro 311 - yes, the nerves releasing vagusstoff)** is involved in the process. After vagus nerve was cut, the effect of *L. reuteri* disappeared, proving that the vagus nerve is required for social behavioral modification by *L. reuteri.*

Sgratti and colleagues next move downstream of the vagus nerve to examine

microbial effects on brain areas important for social behavior, including the paraventricular nucleus (PVN) of the hypothalamus and the ventral tegmental area (VTA) of the midbrain. During social interactions, the neuropeptide oxytocin is released from the PVN, which increases the activity of dopamine neurons in the VTA. Social reinforcement is then obtained by coordinated actions of dopamine, oxytocin, and serotonin. Interestingly, the researchers found that *L. reuteri* treatment promotes oxytocin expression in the PVN and long-term potentiation (LTP) in dopaminergic neurons in the VTA. Disabling dopaminergic neurons in VTA genetically or pharmacologically result in the loss of improvements by the bacteria, suggesting that *L. reuteri* increases sociability in mice at least in part by promoting oxytocin expression and signaling and modulating synaptic plasticity of VTA DA neurons. These findings lay the groundwork for determining whether modulating LTP in the VTA is sufficient to enhance sociability in mice and whether *L. reuteri* treatment impacts any other components of social reward circuits. More broadly, these results motivate continued efforts to dissect how microbial factors modulate neuronal circuits underlying complex host behaviors.

This work highlights the possibility of a microbe-based treatment for social behavioral impairments in mouse models and further inspire investigation into the safety and efficacy of translating the work to human ASD. However, many questions need to be answered. What is the effect of *L. reuteri* on other parts of the brain except for sociability? Would the bacteria have the same effect if it is taken in chronologically, rather than acutely? Can we identify the novel molecules responsible for the changes to develop pharmacological interventions? The increasing understanding of the gut-brain relationship gives rise to a new perspective on psychiatric diseases and new classes of possible treatments.

Take home message: I guess some people are more social because they eat differently?

Mice, like people, sleep better in a hammock, *Current Biology*

Contributed by Rossoneri Jing

For human, mild rocking helps both adults and children fall asleep faster and experience deeper, longer sleep. Now, research shows that mice, just like humans, fall asleep faster with a gentle sway. Researchers found that the rodents slept 12% longer with rocking than without, and they fell asleep 51% faster if they had been sleep-deprived.

Previously, scientists have suspected that the vestibular system—the bits of the inner ear that keep us balanced and oriented in space—might be involved in this phenomena, but there has been no solid proof. However, in the paper published lately on *Current Biology*, the team discovered that mice that lacked a key part of the vestibular system called otoliths did not get any benefit at all from being rocked at bedtime, which confirms that the vestibular system does play a critical role in the effect, at least for mice.

The mice showed differences from people as well. One of them is that the rodents like to be rocked about four times faster than we do. These differences might be due to the fact that mice carry their pups around in their mouths, which has a lulling effect, rather than rocking them in their arms like humans. Though it is still early to speculate on shared evolutionary mechanisms, the new findings provide some intriguing hypothesis for further studies.

The research might eventually lead to better noninvasive treatments for sleep disorders, the researchers say. But for now, you're probably fine with a hammock.

The world's loneliest frog gets a date, *BBC News*

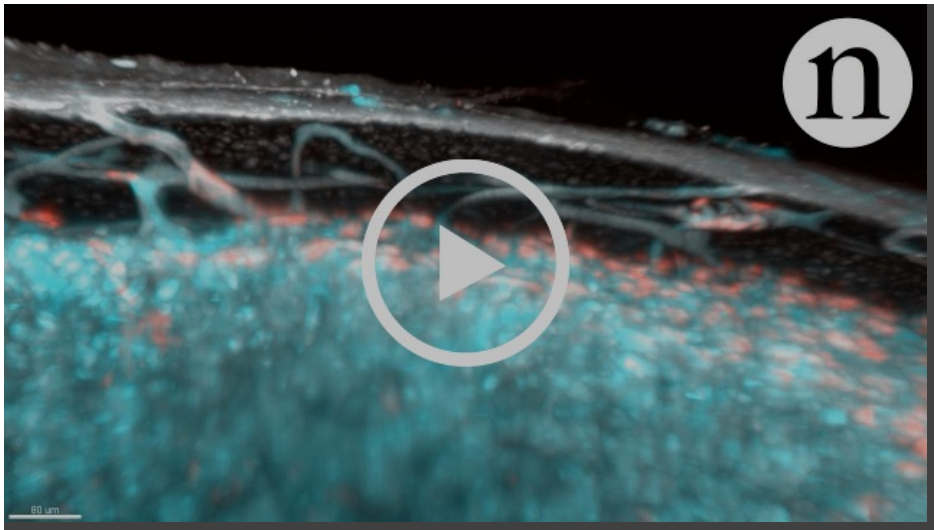
Contributed by Rossoneri Jing

“Romeo”, a Sehuencas water frog, was known to be the world’s loneliest frog since scientists could not find any other frogs in the world that belonged to the same species. Romeo has spent 10 years in isolation at an aquarium in Bolivia, while scientists tried their best to find him a date, which included giving him an online dating profile.

Recently, scientists have found the Juliet. An expedition to a remote cloud forest in Bolivia has returned five wild Sehuencas water frogs—three males and two females. Researchers are now planning to start a captive breeding program with the goal of reintroducing the amphibians back into the wild, and, ultimately, saving the species from extinction.

In Bolivia, 22% of amphibian species face some degree of extinction threat, from habitat loss, pollution and climate change. According to Teresa Camacho Badani, chief of herpetology at the Museo de Historia Natural Alcide d'Orbigny in Cochabamba City and the expedition leader, Romeo's story is important to draw attention to the plight of amphibians.

"It's a really good opportunity to use Romeo to help understand those threats, help understand how to bring those species back from the brink but also at the same time to take advantage of the global profile that Romeo and his species has now," she said.



Transparent bones reveal hidden blood vessels

ISP Sci. Rev. **4** (2019)
Editor: Shiwei Wang, Rossoneri Jing

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